Engineer Research and Development Center

Geotechnical and Structures Laboratory

GSL Strategic Plan

September 2003

Contents

Background

U.S. Army Corps of Engineers Mission Statement

The U.S. Army Corps of Engineers (USACE) serves the Army and the Nation by providing vital engineering services and capabilities, as a public service, across the full spectrum of operations—from peace to war—in support of national interests.

USACE Mission Essential Task List

- Provide engineering, construction, and real estate services for the Army, Air Force, assigned U.S. Government agencies, and foreign countries.
- Identify, facilitate, and implement solutions for water resources challenges.
- Secure, operate, and maintain civil works water resource projects.
- Protect, restore, and enhance the environment.
- Provide timely engineering support for national response efforts to emergencies and disasters.
- Research, develop, transfer, and leverage innovative technologies to solve national engineering challenges.
- Maintain proficiency in core technical and enabling business support functions.

ERDC Mission Statement

The U.S. Army Research and Development Center (ERDC) serves the Army and the Nation through engineering and environmental science research and development that provides technologies, as a public service, across the full spectrum of operations—from peace to war—in support of national interests.

ERDC Mission Essential Task List

- Maintain proficiency in core technical and enabling business support functions.
- Research, develop, transfer, and leverage innovative technologies to
    - Solve national engineering challenges.
    - Provide the Warfighter military engineering and battlespace environments solutions.
    - Provide environmentally sustainable solutions for water resource challenges.
    - Protect, restore, and enhance the environment
    - Support military installation transformation.
    - Provide timely technical assistance in support of military operations and national response efforts to emergencies and disasters.

ERDC Purpose

We make the world a safer and better place. We improve the Nation's security, environment, and economy through our science and engineering research, technology development, and application.

ERDC Values

We exist to serve the Corps of Engineers, the Army, and the Nation. We do this by helping our customers succeed through the superior products and services we provide. We believe that close relations with our customers and continuous improvement in our products and services are essential elements of our business. We pursue growth that enables us to meet our customers' needs more effectively, but reject growth simply for its own sake. Our people are the reason for our success and the key to our future. We employ quality individuals. We treat them with dignity and respect, and actively support their career development. We strive constantly to provide them a stimulating work environment that encourages and rewards teamwork and collaboration at all levels.

ERDC Vision

To be the world's premier public engineering and environmental sciences R&D organization, responding to our Nation's needs in peace and war.

ERDC Vision Description

By 2008:

- Other R&D organizations will use ERDC successes as a benchmark.
- ERDC will receive the Army R&D Lab of the Year award three more times in recognition of the exceptional quality of our people and facilities, and our innovative solutions to engineering problems.
- Our customers will consider us an indispensable element of their business. ERDC will be called upon to solve the Nation's greatest challenges.

ERDC Vision Implementation

We will achieve this vision through our

- Relentless effort to enhance technical excellence—people, facilities, science, and engineering.
- Uncompromising commitment to focus our integrated capability on our customers' needs.
- Aggressive partnering with public and private sector organizations to develop, integrate, and transition innovative technologies to our customers and to the marketplace.

Geotechnical and Structures Laboratory Mission Statement

The ERDC Geotechnical and Structures Laboratory (GSL) serves the Army and the Nation by providing research and development solutions to challenges in geotechnical and structural engineering and related disciplines.

GSL Mission Essential Task List

- Maintain proficiency in core technical and enabling business support functions.
- Research, develop, transfer, and leverage innovative technologies to
    - Advance military engineering in the areas of mobility, countermobility, survivability, and general engineering.
    - Solve the engineering challenges related to the infrastructure of the Corps, the Army, and the Nation.
    - Provide the means to protect the Warfighter and the Civilian Populace from prevailing threats.
    - Provide assured mobility for the Warfighter during force projection, reception, and full-spectrum operations.
    - Give operational forces and emergency response activities timely technical assistance and reachback capability.
    - Protect and enhance the environment through engineering and geosciences applications.

GSL Values

- Exemplify honesty, integrity, and trustworthiness.
- Seek proper balance between self, family, and work.
- Promote cooperation, openness, and candor.
- Strive for excellence.
- Have fun.

GSL Vision

GSL will be recognized as a premier R&D organization. We will achieve this:

- Through uncompromising commitment to the Nation to focus our full integrated capabilities on our customers' needs.
- Through determined efforts to work with others and improve constantly what we do and how we do it.
- By relentlessly reshaping our core capabilities to maintain technical leadership in our mission areas.

Strategic Goal: PEOPLE

Summary of Objectives

- **Attract and retain a world-class workforce.**
- **Create a learning organization.**
- **Develop leaders at all levels.**

Strategies and Actions

Objective 1: Attract and retain a world-class workforce.

Strategy 1.1: Corporately assess recruitment requirements.

Actions:
- Convene and maintain a recruitment committee to determine annual recruitment goals for GSL and project future recruitment requirements for a 5-year period.
- The GSL recruitment committee will foster relationships with Universities, ensure that job fairs are attended and potential candidates are interviewed, develop recruitment information, and train recruiters.

Strategy 1.2: Maintain 95-percent retention rate.

Actions:
- Determine team members' needs for administrative support and provide same.
- Hold internal technical seminars and conferences to inform GSL personnel of the capabilities and projects under way.
- Establish a standing Social Committee for GSL social functions.
- Encourage community involvement with a GSL Outreach Award.
- Plan annual State-of-the-Lab and Town Hall Meetings.

Objective 2: Create a learning organization.

Strategy 2.1: Support employees in maintaining and advancing proficiencies, leadership.

Actions:
- Provide an average of at least 1 week of appropriate training per person per year.
- Implement the ERDC Mentoring Guide [ref: ERDC Handbook, 30 Jun 02]
- Provide new employees an orientation/training program by Lab Director.
- Develop small-group discussion groups for new employees to discuss and share experiences.
- Provide formal leadership training, and monthly seminars.
- Submit at least one nominee annually to the Emerging Leaders Conference.

Strategic Goal: PROCESS

Summary of Objectives

- **Develop a concise set of operational procedures to complement the Corps' Project Management Business Process.**
- **Structure GSL processes to produce the best research results possible, on time, and within budget.**

Strategies and Actions

Objective 1: Develop a concise set of operational procedures to complement the Corps' Project Management Business Process.

Strategy 1.1: Develop GSL's standing operating procedures (SOPs) with examples, and update as needed.

Actions:

- Develop and make available a Handbook of Standard Operating Procedures for GSL. Include examples.
- Provide new employees an orientation/training program.

Objective 2: Structure GSL processes to produce the best research results possible, on time, and within budget.

Strategy 2.1: Implement PMBP processes, like P2 and PMP, to coordinate, communicate, document, and manage projects.

Actions:

- Provide PMBP, PMP, P2, and similar training and discussion groups.
- Establish common financial reports/plans for team members from CEFMS, PMBP, PMP, P2.
- Encourage use of ERDC Customer Satisfaction Survey process.

Strategic Goal: COMMUNICATION

Summary of Objectives

- **Improve GSL internal communications.**
- **Improve quality of proposals and interdisciplinary teamwork.**
- **Develop an aggressive external communication strategy.**

Strategies and Actions

Objective 1: Improve GSL internal communications.

Strategy 1.1: Evaluate the effectiveness of current internal communication measures.

Actions:
- Conduct a survey of effectiveness of communication up, down, and across GSL.
- Conduct small group discussion meetings to identify needed changes.
- Launch GSL Intranet to promote internal communication.
- Establish Director's Suggestion Box on GSL Intranet.

Objective 2: Improve quality of proposals and interdisciplinary teamwork.

Strategy 2.1: Increase quality of proposals.

Actions:
- Encourage senior mentoring and review in proposal development.
- Engage sponsoring program managers to better articulate program objectives and proposal review criteria.
- Provide improved mechanisms for review of proposals, and motivation for improved quality.

Strategy 2.2: Increase interdisciplinary/inter-laboratory teamwork in proposals.

Actions:
- Engage broad teams in seminars, and other means for communicating ERDC-wide internal capabilities.
- Senior mentors communicate advantages of such teamwork, informally.

Objective 3: Develop an aggressive external communication strategy.

Strategy 3.1: Develop effective external communication and marketing tools.

Actions:
- Enhance Web sites.
- Produce some quality videos showing capabilities, facilities, and applications.
- Update fact sheets and brochures for distribution at conferences, meetings, etc.

Strategy 3.2: Build strong customer relationships.

Actions:
- Improve communication with customers through effective use of Project Delivery Teams.
- Promote positive personal interaction between customers and chain of command to receive feedback on quality, timeliness, and value of work.

Strategic Goal: PROGRAM

Summary of Objectives

- **Increase total program by 5 percent per year.**
- **Increase reimbursable to 60 percent of total program.**
- **Seek new technology horizons and maintain existing niche capabilities.**

Strategies and Actions

Objective 1: Increase total program by 5 percent per year.

Strategy 1.1: Conduct marketing at very high levels.

Actions:
- Develop roles and tools for Senior Leaders and TDs.
- Mesh research with National, Army, and sponsor priorities.

Strategy 1.2: Pursue partnering opportunities and new funding options.

Actions:
- Identify partnering mechanisms available, and new funding options such as CW O&M.
- Find support for technical services, such as tele-engineering.
- Conduct marketing to schools, commands, divisions, centers, and other DoD laboratories/agencies.
- Examine details and exchange opportunities to grow connections with growing leaders.

Objective 2: Increase reimbursable percentage to 60 percent of total program.

Strategy 2.1: Conduct marketing at PI level.

Actions:
- Develop marketing roles, training, mentoring and tools for PIs.
- Grow niche capabilities through recruitment, training, and mentoring.

Strategy 2.2: Exercise good stewardship of departmental accounts.

Actions:
- Reorganize budget, track expenditures more closely, and minimize PRIP expenditures.

Objective 3: Seek new technology horizons.

Strategy 3.1: Examine emerging technologies and encourage innovation from staff.

Actions:
- Encourage team members to develop and participate in staff rides, industry tours, university collaborations, inter-laboratory proposals and projects, developmental assignments, basic research proposals, and sabbaticals.
- Support peer reviews, seminars, and other venues to identify future directions.

Strategic Goal: FACILITIES

Summary of Objectives

- **Provide modern, cost-effective, and attractive buildings and office spaces.**
- **Provide state-of-the-art laboratory and field experimental facilities.**
- **Provide the latest information technology, testing, and support equipment.**

Strategies and Actions

Objective 1: *Provide modern, cost-effective, and attractive buildings and office spaces.*

Strategy 1.1: Develop plans and timelines, and secure funding for updated facilities.

Actions:
- Establish a larger scope TEOC-type facility.
- Survey Buildings 3278, 3286, 3288, 5008, and 5014 for remediation of HVAC, roofs, and asbestos abatement and investigate steps for use of RPMA funding.
- Develop plans and secure military construction funding to replace Buildings 3278, 3286, 3288, 5008, and 5014.
- Survey Buildings 3396 and 6000 for potential additions and betterments that would enhance quality of life and functionality and reduce PRIP and maintenance expenses.

Objective 2: *Provide state-of-the-art laboratory and field experimental facilities.*

Strategy 2.1: Consolidate GSL laboratories to most efficiently meet long-term research needs while minimizing maintenance costs facilities.

Actions:
- Survey the present and future activities and funding sources for each laboratory within GSL, and develop consolidation plans.
- Secure a GSL-controlled explosive experimental site with the capacity to detonate up to 5,000 lb of TNT-equivalent explosives above ground.

Objective 3: *Provide the latest information technology, experimental, and support equipment.*

Strategy 3.1: Establish a prioritized list and fund an annual upgrade and augmentation of equipment needs.

Actions:
- Establish annual IT equipment needs and in-building requirements, including estimate costs.
- Survey available GSL laboratory equipment to determine future equipment needs, existing equipment disposal, and funding sources.
- Determine long-term support equipment needs and funding sources.

Metrics for Success

Overarching Metrics to Measure Success of Implementation of GSL Strategic Plan

- **Increase number of professional publications, presentations.**
- **Increase total GSL program.**
- **Reduce cost of doing business.**
- **Implement PMBP with PMP and Customer Care feedback.**
- **Increase training and achievements of all staff.**
- **Increase number of journal articles produced.**
- **Increase number of technical reports produced.**

Overarching Metrics / Strategic Element	Number of Publications and Presentations	Increase in GSL Program	Reduce Cost of Doing Business	PMBP Implementation and Customer Satisfaction	Training and Achievements
People	✓	✓		✓	✓
Process			✓	✓	
Communication	✓			✓	✓
Facilities		✓	✓		
Program	✓	✓		✓	✓

Appendix–Planning Concepts

Strategic Goal–People

To determine the actions that can be taken to accomplish the strategies and the primary objectives, background information in terms of personnel actions, technical training, and leadership training was analyzed.

An investigation of historical personnel actions in terms of losses was conducted. This was limited to the past 2 years, since previous to that time the Labs (Geotechnical, Structures) were separate and in a "downsizing" mode. This information was coupled with information on retirement-eligible personnel over the next 10 years. Figure 1 provides a summary of the cumulative retirement-eligible personnel by discipline through 2012.

Using the information from Figure 1 coupled with the historical trend on personnel leaving GSL for other reasons, a determination was made on the number of recruitments GSL will need to make on an annual basis. Figure 2 shows a recruitment plan taking into account retirement-eligible personnel, other losses, and a 5-percent growth rate. Based on these results, it is expected that GSL will need to hire an average of approximately 35 people a year over the next 10 years.

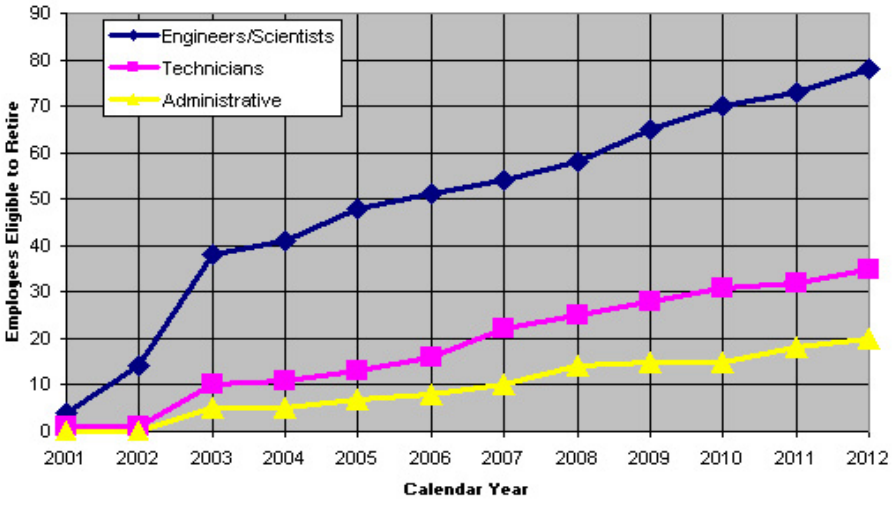

Figure 1. Cumulative retirement-eligible personnel (Jan 03) by discipline

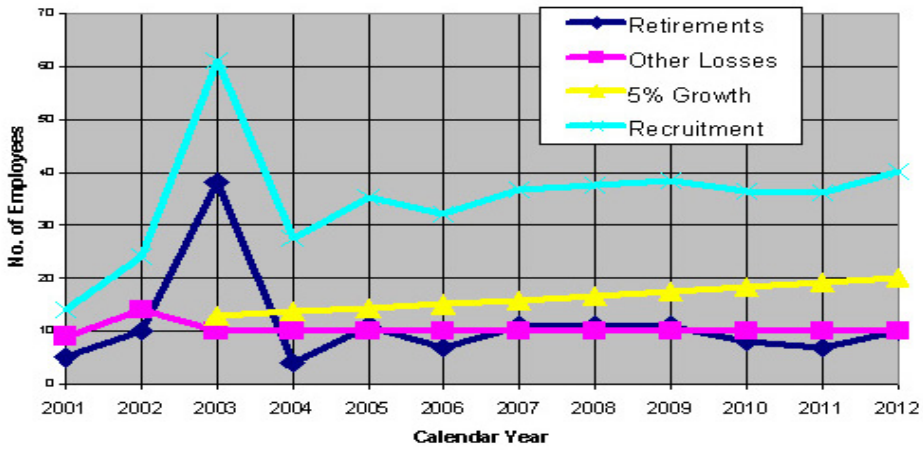

Figure 2. Recruitment strategy

Two areas of training are core to the interests of our organization—technical and leadership training. These areas of training will benefit both the employee and the organization. The type of training that usually comes to mind when considering work-related training is technical training. Technical training is a tool for employees to advance their knowledge and capabilities in their occupational field. The ERDC has historically supported, and the GSL has vigorously supported, participated in, and benefited from, the technical training of its engineer and scientist (E&S) personnel, through such programs as the Graduate Institute and Long Term Training (LTT). In addition, every employee will benefit from leadership training. Although most employees may not be in a supervisory position during their career, all positions require various aspects of leadership.

The following guidance is generic in nature and should be used a tool to develop a program with each employee's supervisor, and a mentor if so desired. The results of the program developed for each employee should be documented on his or her Individual Development Plan (IDP). In addition, the employee should thoroughly review and consider revising his IDP on at least an annual basis.

Technical training

E&S career fields: The E&S career fields encourage formal training through the Ph.D. level. The WES Graduate Institute provides the opportunity for individuals to achieve a Master's degree through one of the three member institutes. Each individual's course of study needs to be developed through his or her supervisor and advisor.

For those individuals with a Bachelor's degree, it is expected, in our research environment, that they pursue and obtain, at a minimum, a Master's degree. It is highly encouraged that they pursue and obtain a Ph.D. It is very difficult to reach the upper levels as a researcher without a Ph.D. As for a Master's degree, the course of study for a Ph.D. needs to be worked out with an employee's supervisor and advisor. LTT provides an opportunity for pursuing a Ph.D. The qualifications and application packages for LTT can be found on the ERDC Intranet site by following the Subject Index link for Long Term Training.

In addition to formal university training, in order for GSL to maintain its place as a leader in the research field, its employees must become involved in professional societies and standards organizations. To achieve top levels on the research ladder, an individual must be an industry leader in his or her field of study. Organizations such as ASTM, ACI, and ASCE provide opportunities for individuals to grow professionally. Supervisors and mentors can help guide individuals through the process of becoming active and instrumental in such organizations.

Professional registration is encouraged and expected. Most professional fields provide for some type of registration or licensure, such as Professional Engineer and Registered Professional Geologist. It is expected that GSL's professional staff will obtain the status of professional in their chosen field, so that they will be recognized by their peers in industry and academia as meeting the standards of their professional field.

Technician fields: Technicians are encouraged to take college-level courses appropriate to their positions. In addition, certification in their field is recommended to ensure project sponsors that the work being performed is according to industry standards. An example of technician certification is ACI Laboratory Testing Technician Grade I. Additional training in computer software applications, equipment operation, additional test methods (cross training), electronics, etc., is encouraged to increase the flexibility of technicians in meeting all challenges related to performing their duties.

Administrative and support staff fields: Administrative personnel are encouraged to take college-level courses appropriate to their positions. In addition, short courses in the areas of technical writing, grammar, and computer software applications are recommended for increasing the individual's effectiveness and efficiency in performing assigned duties.

Leadership training–managerial, E&S

Figure 3 illustrates the basic requirements for advancing on the supervisory ladder. Many of the courses listed are also appropriate for nonsupervisors. Details of the requirements for these courses can be found on the ERDC Intranet (Subject Index link: Leadership Training). Table 1 provides a basic guide for all disciplines to pursue leadership training.

Figure 3. Core curriculum for leadership development

Table 1. ERDC Leadership Development Curriculum

Competency Area: / **Competency Skills:**	**Basic**	**Intermediate**	**Advanced**
Communication Skills	Interpersonal Communication Active Listening Presentation Skills Coaching Mentoring (PMBP) (Protégé)	Giving and Receiving Feedback Influencing & Achieving Results	Coaching Mentoring (PMBP) (Mentor)
Working in Teams	The Organization, Teams and Me (PMBP) Functioning as a Team Member Using Technology (VTC, Placeware)	Leading Technical Teams Building & Sustaining Teams Managing Virtual Teams	Delegating Strategic Thinking
Problem Solving	Conflict Resolution	Negotiation Skills Facilitation Skills	Decision Making Mediation Skills
Partnering	CorpsPath (CD1) Why PMBP ERDC Orientation	Developmental Assignments "Exchange Program"	Political Savvy Leveraging Diversity

Strategic Goal: Communication

The GSL Strategy Committee on Communication is developing a GSL implementation plan for improving external communications. The underlying concept is the need to ***market*** GSL expertise, where marketing is defined as "exposing products or services to a market." This exposure has a twofold objective:

- To develop communication tools to attract new customers ("pre-sale").
- To develop communication tools to build strong customer relations and maintain customer satisfaction once the sale is made ("post-sale").

When GSL has successfully developed these two areas of communication, we will have created a strong conduit for the growth of our reimbursable programs.

The draft "GSL Implementation Plan for Improving External Communications" addresses the pre-sale aspect and outlines specific implementation steps. These are summarized below.

Make your point clear and concise

It is just as important to get the message right as it is to choose the right method of communicating. The primary reason for marketing your products/services is to communicate your value to the people that will benefit the most. The hardest part of this process is f*ocusing the message*, that is, narrowing down your offering so that you can communicate it easily and understandably to your target market. The good news is that, once you have your business focus clearly defined, you can develop a solid marketing plan that will successfully attract clients.

> ACTION ITEM: Identify the core capabilities we wish to advertise within GSL. It is essential to get the PIs involved, because they know what their peers want. An attractive, 1-page fact sheet with dynamic photos should be prepared for each identified capability.

Attract people to your information

Once we have identified the core capabilities that we wish to advertise, we need to begin the process of "advertising." Several communicate methods are available to reach the target audience.

a. Web sites (more similar to the "pre-9-11" efforts). The Web is an excellent marketing tool. We need a professional site, with professional-quality graphics and layout with video clips. The Web page must be very clear and concise and very easy to navigate.

> ACTION ITEM: Identify people who can do attractive high-quality website development.

b. Produce some quality videos showing capabilities, facilities, and potential applications for a broad range of sponsors. This effort should include both short segments to enhance the Web site and longer marketing videos (PowerPoint overviews are good and sometimes appropriate, but "wow, gee whiz" videos sell). Success stories and products should be highlighted.

ACTION ITEM: Collect already existing videos and have them converted to MPG format (CD format). Identify short clips that can be used in briefings and on the Web site. Create an easy mechanism for PIs to be able to call someone to have video filmed at dynamic parts of his or her project. Identify one POC in VPC who we can work with and will deliver a quality product in a timely manner.

c. Update fact sheets and brochures for distribution at conferences and meetings.

ACTION ITEM: Create a GSL marketing CD that automatically runs when entered into the user's machine. It loads a very professional looking interface that allows the user to click and navigate through the GSL capabilities, videos, fact sheets.

d. Publish a GSL newsletter and allow our Web site visitors to subscribe to it. This gives us an e-mail database for providing a targeted audience with the most current information about our research and capabilities.

ACTION ITEM: Identify person to collect the information and create the GSL newsletter. The newsletter must be held to a high standard of quality and reviewed by a technical editor for QA. It is recommended that someone be held accountable for quality assurance of all GSL marketing materials. This is an individual or team who will hold the quality of the presentations to a high level. This is ***not*** a review for technical content but to ensure that the visual appearance, functionality, and overall presentation is at a level of excellence.

Encourage visitors to follow through and make contact about our services

Okay. We've got them! They are interested in finding out more information. They call in and get a voice-mail. The message on the voice-mail sounds like a guy who hates his job. They hang up and don't call back. We can't drop the ball. What do we do? ***We need to be ready!*** If they e-mail, we need to have a computer auto-respond. (Have a computer respond immediately to let them know we got their e-mail and that someone will be in touch ASAP.) Then, follow up!

Others may pick up the phone and need immediate assistance. Can GSL have a front person that answers our calls that are generated off of our advertising materials? This would be a phone number that is published ***only*** through the Web site and other advertising materials. The phone would be manned during all business hours and forwarded to a professional voice-mail at all other times. This "GSL-public affairs (PA)" person would be our representative to GSL for that initial contact and must be friendly, patient, and very customer oriented). He/she would forward the person to the appropriate contact for a project. This way, a phone is always answered–with no voice-mail. This PA person could also follow up with customers to make sure that they received a reply and that their needs were met.